

Remarks on Mr. Plimmer's Note on the Effects produced in Rats by the Trypanosomata of Gambian Fever and Sleeping Sickness.

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Mr. Plimmer reports observations* on three rats inoculated with trypanosomes from a monkey infected with the parasite of Uganda Sleeping Sickness and on 14 rats infected with the trypanosoma of Gambian Fever. The three rats inoculated with Uganda Sleeping Sickness never exhibited organisms in their blood, but after six to nine months developed paresis ending in death.

Post-mortem.—No macroscopic lesions of any organ were found. Examination of the blood gave negative results, as also did extracts of the organs, except that of the spinal cord, in which a few trypanosomes were found. Animals inoculated with some of this spinal cord extract did not show parasites in their blood. The rats infected with the Gambian Fever trypanosoma showed parasites in their blood and died.

Mr. Plimmer concludes from these experiments that Gambian Fever and Uganda Sleeping Sickness are distinct diseases.

My colleague, Dr. Linton, and myself compared the animal reactions of the trypanosomes derived from Uganda and Congo Free State Sleeping Sickness cases, and Uganda and Congo Free State trypanosome fever cases, with those of the parasites obtained by Drs. Dutton and Todd from three cases of natives suffering from Gambian Fever.

I have had the opportunity of using the same strain of Uganda Sleeping Sickness parasite as Mr. Plimmer, and he has experimented with one of the strains of trypanosomes from the Gambia Fever cases.

I have been able to compare 10 strains derived from Congo Free State Sleeping Sickness cases which were sent me by the members of our Congo Free State Expedition. In addition I have had four strains of Congo Native

* H. G. Plimmer, F.L.S., "Note on the Effect produced on Rats by the Trypanosomata of Gambia Fever and Sleeping Sickness," communicated by Dr. C. J. Martin, F.R.S., received December 1, 1904, read January 19, 1905.—'Roy. Soc. Proc.' No. 504, February 24, 1905, vol. 74, pp. 388—390.

Fever parasites, and since May, 1904, three strains of trypanosomes obtained by me from cases of Sleeping Sickness which died in Liverpool.

I have been able to inoculate rats directly with cerebro-spinal fluid from my cases. I have, therefore, been able to compare the trypanosomes derived from many different strains.

After a comparison of over 1000 experiments, nearly 600 being on rats, I have had to conclude that all the parasites are identical with *T. gambiense*. Rats inoculated with a Sleeping Sickness strain show parasites in their blood and finally succumb to the infection in the same way as do their controls infected with a Gambian Fever strain. No symptoms of paraplegia have been observed in any of the rats. *Post-mortem*.—The same enlargement of the spleen and some enlargement of the glands are observable.

Mr. Plimmer reports that morphologically the parasite of Gambian Fever differs from that of Sleeping Sickness in similar animals, the former being larger and more easily stainable than the stumpy, badly staining trypanosomes with large vacuoles of Sleeping Sickness.

I am not in accord with these observations, after numerous observations in parallel series with each strain of trypanosome, *i.e.*, same species of animal and same number of passages, and passage through same species of animals. I can detect no marked difference. Both stumpy and large forms are met with, vacuoles are most often observed in films made from very serous blood from exudates, and are often present in films which are allowed to dry slowly or are improperly fixed.

Experiments were made by inoculating rats and larger animals with the Gambian Fever trypanosomata, and, after the appearance of the parasite injecting them with Uganda or Congo Sleeping Sickness organisms, and *vice versa*, using controls in all cases. From a comparison of the blood of these animals with their controls, both in fresh and stained films it was impossible to determine which parasite was the Gambian one.

Professors Laveran and Mesnil, and the members of our Congo Expedition, from a comparison of the trypanosomes of Gambian Fever and Sleeping Sickness, have also been unable to detect any differences.

Professor Laveran, who has had the opportunity of working with Gambia Fever and Uganda Sleeping Sickness parasites, in a private communication which he allows me to make public, states that he has never observed symptoms of paralysis in his series of rats infected with these strains.

I, therefore, do not feel that Mr. Plimmer is justified in concluding that Gambia Fever and Sleeping Sickness are distinct diseases.